What Is Claimed Is:

1. A method for manufacturing a layer system, the layer system including a ceramic carrier and at least one functional layer, the functional layer containing a solvent, the method comprising:

depositing a barrier layer on the ceramic carrier;

depositing the functional layer on the barrier layer,

wherein the barrier layer prevents the solvent from penetrating the ceramic carrier from the functional layer.

2. The method according to claim 1, wherein the layer system is for a sensor element for determining a physical variable of a gas to be measured.

3. The method according to claim 2, wherein the sensor element is for determining at least one of a concentration of a gas component and a temperature in an exhaust gas of an internal combustion engine.

4. The method according to claim 1, further comprising, after the barrier layer is deposited and before the functional layer is deposited, subjecting the barrier layer to a drying process.

5. The method according to claim 1, wherein the barrier layer contains at least one of polyvinyl alcohol and a two-component lacquer.

6. The method according to claim 1, wherein the barrier layer, when deposited on the ceramic carrier, substantially contains polyvinyl alcohol in a proportion of 30 to 50 percent by weight, and water in a proportion of 50 to 70 percent by weight, and the water vaporizes during a drying process that follows the application.

7. The method according to claim 6, wherein the proportion of polyvinyl alcohol is 40 percent and the proportion of water is 60 percent.

8. The method according to claim 1, further comprising adding a defoaming

agent to the barrier layer.

9. The method according to claim 1, wherein the barrier layer has a thickness of 10 to 20 µm after a drying process.

10. The method according to claim 1, wherein, after the functional layer is deposited, the barrier layer vaporizes by heating.

11. The method according to claim 1, wherein, after the functional layer is deposited, the barrier layer disintegrates.

12. The method according to claim 1, further comprising subjecting the layer system to a heat treatment in which, in a first phase, the layer system is heated to a temperature below a sintering temperature of the ceramic carrier, the barrier layer disintegrating, and in which, in a second phase, the layer system is heated to a temperature at which the ceramic carrier and the functional layer fuse.

13. The method according to claim 12, wherein the layer system, in the first phase, is heated from 20 degrees Celsius to 200 degrees Celsius over a period of 2 hours and, in a second phase, is heated from 200 degrees Celsius to over 1200 degrees Celsius and is held at a temperature over 1200 degrees Celsius for 3 to 8 hours.

14. The method according to claim 1, wherein the barrier layer and the functional layer are applied to the ceramic carrier, one of using a screen printing method, by spraying, or using a coating unit with pressure rollers.

15. The method according to claim 1, wherein the at least one functional layer includes an electron-conducting layer including at least one of an electrode, a heating element, a printed resistor, a lead, an insulating layer, an oxygen ion-conducting layer, a porous protective layer, and a layer that leaves behind one of a cavity and a porous material after sintering.

16. The method according to claim 1, wherein the functional layer contains at least one of butylcarbitol and 2-ethyl-1-hexanol as the solvent.